

Rock River Union Pacific Snowshed Plant  
Rock River vicinity  
Albany County  
Wyoming

HAER No. WY-6

HAER  
WYO,  
1-ROCRIV,  
2-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPY OF MEASURED DRAWING

Historic American Engineering Record  
Rocky Mountain Regional Office  
National Park Service  
U. S. Department of the Interior  
P. O. Box 25287  
Denver, Colorado 80225

HISTORIC AMERICAN ENGINEERING RECORD

HAER  
WYO,  
1-ROCRIV,  
2-

Rock River Union Pacific Snowshed Plant

HAER No. WY-6

Location: 0.6 mile north of Rock River; Albany County, Wyoming

Date of Construction: 1917

Builder: Houghton Construction Company

Present Owner: State of Wyoming Highway Department  
Department of Transportation  
P. O. Box 1708  
Cheyenne, Wyoming 82001

Present Use: Abandoned and dismantled; the site is delineated by structural remnants and outlines of the concrete precasting forms. It faces impact from a highway construction project.

Significance: The site was the location of the Union Pacific Transcontinental Railroad snowshed construction plant. The plant was built after the unusually severe blizzards during the winter of 1916-17 that nearly paralyzed rail operations between Cheyenne and Rawlins for a two week period. The railroad's solution was to erect several snowsheds over the yards at Rock River and three additional sites between Rock River and Medicine Bow. The initial temporary timber and iron structures were replaced with permanent precasted concrete snowsheds of innovative design. These were manufactured in the open-air construction plant near Rock River. The prefabrication technique used had only recently been adopted in the United States. The snowshed plant was a major industrial undertaking which had substantial impact on the towns of Laramie and Red River. Once construction of the four snowsheds were completed, Union Pacific dismantled the construction plant and abandoned the site.

Historian: Clayton B. Fraser, Fraserdesign, 1983

## Section 1. INTRODUCTION

This study is an historical evaluation of a snowshed construction plant built by the Union Pacific Railroad in the early twentieth century. The plant, now only a site delineated by structural remnants and piles of concrete waste from the precasting process, is situated near the town of Rock River, in Albany County, Wyoming. It faces potential impact from the proposed Rock River West Project [project number SRRS-0105(2)] - a road construction project contemplated by the Wyoming State Highway Department. Undertaken in compliance with the requirements of the Wyoming State Historic Preservation Office (SHPO), this study is intended to serve three objectives:

- \* To comment upon the relative historical and engineering significance of the snowshed construction plant, with an evaluation of its potential for eligibility to the National Register of Historic Places.
- \* To describe the present appearance of the site, with emphasis placed on the retention of its historical integrity.
- \* To evaluate the probable impact upon the site by construction and use of the proposed road and to suggest measures by which the impact may be mitigated, if warranted.

The sections which comprise this report are the Introduction, Historical Overview, Environmental Setting, Evaluation and Recommendations, References, and Appendices.

Methods used in this study include gathering information from previous inventories conducted by the Wyoming SHPO and the Albany County Planning Office, use of primary and secondary source materials provided by the entities listed below, oral interviews, use of aerial photographs and site plans provided by the Wyoming State Highway Department (WSHD), and intensive on-site survey of the plant site. Sources which have provided consultation and/or materials for the study include:

Wyoming State Historic Preservation Office  
Wyoming State Highway Department  
Wyoming State Historical Department  
American Heritage Center, University of Wyoming  
Library of Science and Technology, University of Wyoming  
Albany County Clerk  
Albany County Library  
Denver Public Library  
Historic American Engineering Record  
National Register of Historic Places  
Heritage Conservation and Recreation Service, Mid-Continent Region  
Union Pacific Railroad

Historic photographs of the construction plant and the snowsheds, both wood and concrete, erected at Rock River are included in the Index to Photographs. Additionally, archival black and white field photographs have been taken from a number of viewpoints at the site to illustrate its present condition. The photographs were taken using a tripod-mounted, monorail 4x5 view camera; they are fully perspective-corrected in accordance with photographic recording standards maintained by the Historic American Engineering Record. Photo viewpoints, as well as other pertinent data, are indicated on the annotated USGS quadrangle map included in this report.

## Section 2. HISTORICAL OVERVIEW

Wyoming's winter of 1916-17 was a hard one for the Union Pacific Railroad. Unusually heavy snows, pushed by relentless winds and accompanied by intense cold, battered the railroad's transcontinental link over its route across the Laramie Plains, a region notorious for its bitter winters. These snowstorms continually beleaguered the railroad, forcing frequent delays or, worse, total blockades. Particularly harsh were the blizzards of late January and early February -- "the most stupendous storm blockade that some of the older men on the road ever saw." During this two-week period, the railroad struggled against utter paralysis as the double- and triple-track roadway between Cheyenne and Rawlins was sealed by deep, hard snow for the first time in history.

Beginning early on January 22, the first wave of snow had virtually halted all traffic west of Laramie by midnight. Snowfences, erected as many as seven rows deep in some places, were quickly drifted over, and massive wedge and rotary snowplows were dispatched to the fifth district - over Sherman Hill and the sixth district - west of Laramie. The storms continued unabated for several days afterward, with temperatures dropping to thirty degrees below zero and wind-driven snow refilling cuts within thirty minutes after they had been cleared by snowplows. According to J. Cecil Alter of Cheyenne, as quoted in the March 31, 1917 Literary Digest:

In many of the drifts, the depths was greater than the capacity of the rotaries, and short holes were drilled, into which the sides and top were broken by laborers, a slow, tedious process. In regions where desert sand was mixed in large proportions with the drifted snow, the deposit was so compact that only the huge Jull steam-propelled rotary snow-excavator, having a large steel corkscrew projecting from the center of the rotary, could attack it successfully, and then only when three of the largest locomotives available were pushing it against the snow. Four other steam-driven rotaries were busy every hour for fifteen days, a commissary car being attached to the rear for the workmen. In addition, there were two Fuller, or wedge, plows built on the box cars; two Russell plows,

similar to the Fuller plows, but larger; six locomotives having wedge snowplows attached in front; and eight engines fitted with circle flangers, or disks for throwing the snow from the rails only.

One line of the railroad could be kept open intermittently, and passenger trains were pushed or pulled across the stricken sections, "it being necessary to send the along with a fight for every foot of the road," according to new Laramie newspaper. Freight movement was suspended entirely. Delays of between six and thirty-six hours were common, when the trains could get through at all. Many were stymied completely by the drifts, forced to return to their stations (when not trapped in the snow), and from January 25 to January 27 and from February 1 to February 3, the railroad was blockaded entirely. Reported in the January 29 issue of Laramie Boomerang:

Saturday morning (January 27th) early about nine trains were released from the local yards and sent west, word having been received that the storm was abating and that trains would be able to get through during the course of the day. However, as the day progressed the fury of the storm increased and late Saturday afternoon the trains were all backed into Laramie. . . Last night fourteen dead engines were brought into the local yards from Rock River. They were out of coal in most cases and out of water in all cases. The engines were replenished and sent back to their trains as fast as possible but at ten o'clock this morning there were eight dead engines in the yards. . . All trains were sent west early this morning but reports received today say that they are all marooned between Hanna and Rock River.

The newspaper continued, somewhat plaintively:

It was reported at noon today that the plows, assisted by the laborers, had cleared one track long enough to get one train through to Hanna. However, the tracks were drifted again shortly afterwards and two snow plows were working to get another train through. Eastbound trains, however, are almost hopelessly marooned. There has not been a regular passenger train from the west since early Saturday morning and there is no telling when one will get through. The drifting lets up at times for about an hour, but just about the time a train is to be piloted through the wind comes up again and does away with all the previous work.

The blockade spared no one, not even high officials of the Union Pacific. Such Omaha dignitaries as J. A. Ottoman, General Roadmaster; W. A. Whitney, Master of Transportation; William A. Jeffers, General Manager (and later president), and Union Pacific President Calvin, with many members of the Board of Directors, were at one time or another stranded in Wyoming by the blizzards. Calvin's private train was one of those unfortunate ten trapped

between Hanna and Rock River on January 29, an occurrence which may have influenced his later decision to erect the snowsheds at Rock River.

On the evening of February 4, the wind had begun to die down, allowing the laborers to begin clearing the tracks. Between forty to forty-five passenger trains were then stranded, many of them stalled between stations. They were dug out of massive snow drifts one by one. The blizzard had ended, and the trains were soon again dispatched across the line with some regularity.

The blockade and efforts to plow through it had provided quite a spectacle and was reported in national news media of the time, journals, newspapers (including the Hearst chain) and even newsreels, as the Selig Tribune Motion Picture Company of Chicago sent a film crew to Rock River to photograph the snow plows in action and the buried locomotives. Again, J. Cecil Alter:

The damage to track and equipment, aside from wear and tear, was practically negligible, in spite of the frequent deaths of a great many engines stalled out of reach of water or coal. One fatal accident occurred when, in the blinding snow, a young employee on a private errand stepped [sic] from a caboose in front of an approaching train. No other injuries of any kind were reported, and not a passenger suffered any special hardship or physical inconvenience, as food, heat, and bedding were provided just as in ordinary travel, but without expense to any one. Even special entertainment was offered by citizens of Cheyenne, Laramie, Rock River, and Rawlins; and for some travelers the joys of jack-rabbit hunting were too abruptly terminated by the clearing of the lines.

The cost to the Union Pacific, however, had been enormous. The railroad had sent over a thousand men into the fray - regular maintenance crews augmented by laborers brought to Wyoming aboard a chartered fifteen-car train from Omaha or recruited from the Union Pacific coal mines at Hanna and Rock River. And although substantially less than the "millions if necessary" pledged by railroad officials to clear the tracks, the monetary costs had ranged into the hundreds of thousands of dollars. Clearly a more permanent solution to the problem was called for.

The railroad quickly formulated one; it would erect a number of snowsheds over the yards at Rock River. It was at that point along the line that the major bottleneck had occurred. A single snowdrift more than three hundred feet long and twenty-one feet deep had blocked the tracks and rendered inaccessible the station's coal chutes and water tank. The Union Pacific set out immediately to erect a timber-framed shed on either side of the large frame coal chute over both pairs of tracks. [The construction process was recorded by Cheyenne-based Union Pacific photographer Joseph E. Stimson; two of Stimson's photos are included in the Appendix.] Log pilings were first driven into the frozen ground, using a special flatcar-mounted pile driver, their crowns hewn to accept the sill plates of the wood frame walls. The skeletal frame of the shed

was then erected from the lumber stacked alongside the tracks. Braced and buttressed, vertical timbers supported the large triangular roof trusses, and all the timber connections were bolted together. Corrugated iron sheets were then fastened to form the sidewalls and roof, with series of panels omitted to allow the escape of the locomotives' smoke and the entry of light. Despite the fact that the construction was undertaken during the winter, the work progressed rapidly, and a brief article in the February 28, 1917 Laramie Republican noted:

The snow sheds at Rock River are nearing completion. There are several hundred feet of them, lined with iron and iron roofing. They are intended to prevent the blocking of the lines by drifting snow, as has been the case on two or three occasions this winter.

Apparently this shed was intended as a stopgap measure, to serve until more substantial structures could be erected later. Reported the Laramie Republican on March 7:

The Union Pacific Railroad company will construct permanent concrete snow sheds at various points along its lines now affected by occasional snow blockades. Work has already been started on temporary wooden sheds which will give some protection, but these are to be replaced in the near future by more permanent structures. The estimated cost of these improvements will be \$1,000,000.

Snowsheds had been long used by the Union Pacific to shelter some of the more troublesome sections of the tracks from the heavy winter and spring blizzards which covered the West. First erected in 1870, these wood structures were maintained, repaired or demolished as necessary, with new ones springing up often within days of the preceding snowstorms. As Nobel Prize-winning Polish novelist Henry Sieniewicz indicates in his 1876 Letters From a Journey to America, these sheds were something less than engineering marvels:

We were approaching Cheyenne, a station in Wyoming, but before reaching it we rode through the first snowshed, which was more than a mile long. These snowsheds are extremely long galleries covered by a roof to protect the railroad tracks from snowdrifts. I had heard so many tales and so much wonder about them that I admit complete disappointment. It is true that these galleries are very long, but also that they are nailed together of planks and beams in the crudest manner. The beams are held together by nails - in the roof a multitude of holes - in a word, the whole thing was built the way we used to build houses a few decades ago. Although construction of this type can be absolutely adequate, in no case does it warrant being regarded as the eighth wonder of the world.

Some of the sheds proved quite dangerous, as was the case with Snowshed No. 7, one mile west of Sherman. Built with only four feet of clearance between the roof of the shed and the boxcars which passed beneath it, this structure was responsible for the deaths of at least seven brakemen before the Laramie coroner's inquest in 1890 held the Union Pacific "culpably guilty of negligence."

These early snowsheds had been built largely using wood timbers as the supporting members and wood planks as the sheathing, although iron- and steel-framed structures had also been erected. Their drawbacks were severe: the fire risk from the steam locomotives was extremely high, and the wood structures required frequent maintenance. The new sheds proposed for Rock River, on the other hand, were to be constructed of concrete - assemblages of components fabricated separately at a construction plant and assembled in place over the tracks. Although the material to be used - Portland cement, which was mixed with stone aggregate and reinforced by iron bars and woven mesh - had been invented around 1811 by the Englishman Joseph Aspdin and first manufactured in the United States in 1871, the prefabrication technique had only recently emerged in the United States. Known as concrete precasting, it had been developed largely by European engineers in the last decade of the nineteenth century and through World War I. The design of these sheds was innovative enough to warrant a descriptive article in the January 12, 1918 Scientific American, entitled "Concrete Snowsheds of Novel Design." The magazine described the sheds as being "of an artistic design and decidedly light and airy," and continued with a detailed description of the design:

The most striking feature about the sheds under construction is not so much the fact that they are of reinforced concrete, but that they are so constructed in units that at a later time they may be readily dismantled and moved to another location on the road, if protection from snow should prove more necessary elsewhere. Complex features have been eliminated in this piece of concrete construction and the building of the sheds has been resolved into only four main units. "A" frames, concrete braces in the shape of a letter 'A,' placed at intervals of 15 feet on each side, support the walls. The walls themselves are composed of thin slabs of reinforced concrete, 15 feet long, 4 feet wide, and 2-1/2 inches thick, which fit into the "A" frames. Concrete girders, extending across the tops of the "A" frames on either side, form the support for the roof, and slabs, similar to the wall slabs, are used for roofing. The wall slabs sometimes have been designated as "concrete lumber."

The sheds are supported wherever possible on concrete piles, sunk ten to thirty feet into the ground. Where the rocky ground did not admit of piling being used, "footings," extending only about four feet into the ground, were substituted. At any time the sheds may be dismantled by simply removing the "A" frames, slabs and roof rafters. Then they can be loaded on cars and moved. Rows of the



slabs have purposefully been omitted on the roof, as well as one row on the leeward side, giving locomotive smoke an opportunity to escape, and letting the sunlight in.

Components for the snowsheds were manufactured in an extensive, open-air construction alongside the railroad tracks north of Rock River. [Photographs taken of the plant in operation, as well as of a completed snowshed, are included in the Index to Photographs.] Although claims by one Laramie newspaper that the Rock River facility was the "largest and most modern concrete construction plant west of the Mississippi river" should probably be dismissed as over-eager boosterism, it was nevertheless a major industrial undertaking which had a definite, albeit evanescent, impact upon that small town. The site sprawled over several acres of a broad field, arranged organically around the railroad spur line which bisected it north-south.

To one side loomed the massive timber-framed mixing house. The concrete was mixed by machine in this structure, with gravel and water delivered abroad continuous chains of buckets and powered cement aboard continuous conveyor belts. Once mixed, the fluid concrete was pumped to the top of a central 130-foot-high timber tower and, from there, to another great tower which supported, through systems of suspension cables, long pivoting pipes high above the site. Through these pipes, the concrete was pumped to grout carts which were wheeled over wood tracks mounted above the formworks. Twelve sections of the trestle-mounted rails extended for hundreds of feet parallel north-south from the center dumping point; beneath each rail on either side were the wooden forms used in precasting the components. The concrete was poured into the forms from the pivoting carts and allowed to "set up" or solidify. The reusable forms were then stripped away and the hardened components lifted aboard a small shuttle train by a flatcar-mounted crane.

From the construction plant, the members were carried to the erection site on the specially-constructed spur line which paralleled the tracks on the east. They were then lifted into place by the crane - the "A" frame buttresses weighing 12,000 pounds and the wall panels 2200 pounds - and fastened, "the tongues and grooves of beams, girders, roofing and panels fitting perfectly and easily, with no other fastening than a little liquid cement," according to the Laramie Republican. This procedure was repeated along the length of the shed until it was completed.

The snowshed built at Rock River was the first of four to be fabricated at the construction plant. With a total length of 4,470 feet, it was also the longest; the others, erected at intervals along the line between Rock River and Medicine Bow, were identical in configuration and ranged from 495 feet to 1,800 feet in length. Construction commenced in the spring of 1917 and continued throughout the summer. With men recruited locally and from around the region, the Houghton Construction Company maintained a labor force of between three and five hundred men. Carpenters were in almost constant demand

to build and maintain the wood forms, and the company advertised in the area newspapers for them. Lamented the Laramie Republican:

The local builders are facing a man famine, many of the carpenters of the city having agreed to go to Rock River to work for the railroad company in the building of the snow sheds. It was stated this morning that the railroad company is paying \$52 a week and the local carpenters are accepting the increase in pay. One company lost five men this morning and another is said to be losing two or three. The contractors declare that if the thing keeps up they will be unable to keep their contracts moving to say nothing of new ones expected before the season advances much more.

By the first day of autumn, about one thousand feet of the Rock River shed had been completed, and the workers were progressing at a rate of fifty feet per day. Commented the September 23rd Laramie Republican:

The Houghton Construction company will probably be located two years there (at Rock River) in spite of their intention to push the construction night and day.

The work continued over the next two years and, in 1919, the last of the sheds was completed. The construction plant was then quickly and unceremoniously abandoned and the extensive network of towers, forms, trestles, sheds and other structures dismantled. The aggregate cost for the project was reported at \$600,000, much of it spent within the Rock River-Laramie markets. The rapid influx of the large labor force had nearly tripled the small town's population, creating a substantial economic boom for the local merchants, innkeepers and hostlers. The boom, however, proved transitory. Although some of the men remained in Rock River to participate in the newly-emerging oil boom created by the opening of the McFadden oil fields twelve miles west, most moved back to Laramie, Cheyenne, or away from the region. Eventually, even the oil boom fizzled, and Rock River returned to its original size; its 1940 census indicated a population of 349 people, five more than its population in 1909, when the town was incorporated. [The trend continues to the present, as the 1970 census totalled 344 people, the town's beginning population.]

The timber and concrete snowsheds at Rock River stood in place over the next thirty years. In July and August of 1946, however, the 1177-foot-long timber shed was razed, its members being used by the townspeople for salvage and firewood. On April 2, the following year, demolition was begun on the adjacent concrete shed. G. F. Ashby, president of the Union Pacific, defended the move, saying, "The shed long ago outlived its usefulness. In recent years, with an increase in traffic tending to keep the tracks swept cleaner than ever before and with the acquisition of the most modern snow removal equipment, the shed has been more of a liability than an asset." The concrete components were dismantled, pushed to the west side of the tracks and smashed into smaller pieces. Demolition was completed on May 21, 1947.

### Section 3. ENVIRONMENTAL SETTING

The snowshed construction plant is situated on a broad flat, .6 mile north of the small town of Rock River in Albany County, Wyoming. South of the town flows Rock Creek in its meandering course; beyond that the ground rises to form a minor ridge, known as Upper Pine Ridge. Incorporated in 1909, Rock River is the direct descendant of the early railroad station/town of Rock Creek. When the Union Pacific realigned a section of its transcontinental link in 1900 (partly to shorten the line by some twenty miles, partly to eliminate some troublesome sections of track which tended to drift over during snowstorms), Rock Creek was bypassed in favor of the then-nonexistent town of Rock River, and most of the townspeople and many of the buildings moved virtually overnight to establish the new town. Straddling U. S. Highway 30 -- the Lincoln Highway, America's first transcontinental road -- the town enjoyed an exposure to tourist travel throughout much of this century. However, since the construction of Interstate 80 to the south, Rock River has been relegated to a secondary place in history.

The town is situated within a topographical region known as the Laramie Basin, one of a series of shallow structural depressions in southern Wyoming which combine to form the Wyoming Basin. Like much of southern Wyoming, this basin is fairly high, with an altitude around 7,000 feet. It is a middle latitude desert, sparsely covered with vegetation, primarily sagebrush, saltbush, greasewood, and desert grasses. The basin is bounded on the east by the Laramie Mountains, on the north by the Shirley Basin, and on the west by the Medicine Bow Mountains and a smaller, more dessicated range composed of the Shirley and Seminoe mountains. Between the two ranges lies the Hanna Basin, an unusually deep and narrow intermontane depression which forms a break in the Rocky Mountain front range. This topographical configuration, a natural funnel, tends to concentrate the prevailing westerly winds which sweep across the Great Divide Basin of southwestern Wyoming, frequently creating accelerated wind velocities and heavy snowfalls. This situation is aggravated for the railroad by the fact that the main line is forced to extend south-to-north through the area to avoid the Medicine Bow Mountains, and the grading cuts, therefore, tend to drift under rapidly from the wind-borne snow.

The snowshed construction plant is located across U. S. Highway 30 from the Rock River airport, centered between the Union Pacific main line to the west and the highway to the east. Dismantled and abandoned for sixty years, the plant is today a relatively isolated site, characterized primarily by a series of weathered support structures and the outlines on the ground of the systems of concrete precasting forms. The site sprawls over an area of 5.79 acres, approximately 420 feet by 600 feet. It exhibits an organic spatial organization that is functionally determined and a simplicity of form that is understandable. The overall form is readily discernible from above [a copy of a WSHD aerial photograph is included in the Index to Photographs.] It is roughly quadrilaterally symmetrical, with the major, north-south axis formed

by a railroad spur line which acts as the plant's spine and a minor, less defined, east-west axis formed by the pouring machinery.

This secondary axis is defined by seven wood trestles, the only above-ground structural remnants still in place. Averaging 40 feet squares at the top platforms and ranging from 7 feet, 1 inch to 9 feet, 8 inches above the ground in height, the structures are composed of unpainted timbers and plans, rather roughly assembled and fastened with standard wire nails. These trestles are the inner termini for the twelve grout cart tracks over which the concrete was transported for the forms (five of the trestles served two lines each, the other two, one each). They supported the tracks at the points at which the carts were filled with liquid concrete from the jointed, tower-supported pipes. Resultantly, they are partially encased by large domes of hardened concrete spilled from the carts during the pouring.

Extending in parallel lines from the termini are on-ground ghosts of the twelve grout cart tracks with their attendant sets of concrete forms, six on each side of the center. These average 45 feet in width and range from approximately 205 feet to 345 feet in length. The configurations of the forms can be deduced from their outlines in the pilss of concrete waste on the ground. The waste displays four patterns, one in each of the quadrants, indicating perhaps the four separate components which made up the assembled snowsheds. Through the center of these forms extends the railroad spur line, represented today by the track bed and many of the original wood ties over which materials were transported to the site and the complete components were lifted by a train-mounted crane and rolled to the shed erection sites. The spur line is situated within a ninety-foot-wide gap between the formworks. Also located in this space are a number of pits or depressions and concrete machinery foundations, one of which is probably the foundation for one of the great towers.

Today, the site appears much like it did soon after it was dismantled in 1919, after the completion of the four snowsheds. Deteriorated somewhat by natural weathering and minor pilferage of its cultural material, it remains essentially undisturbed by subsequent activities.

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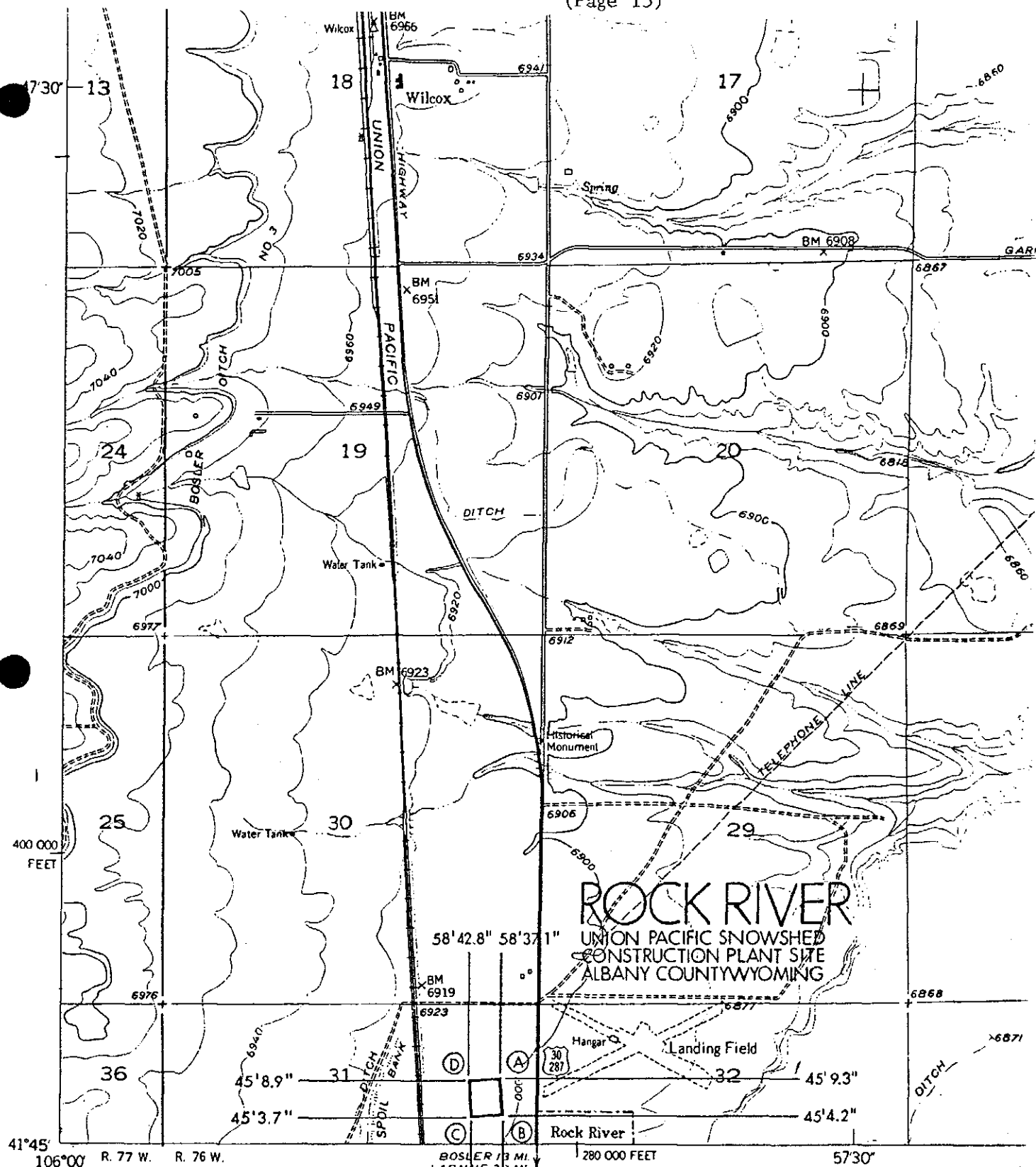
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Lee White, Mayor of Rock River, 23 December 1980.

Louis and Lottie Weinburger, residents of Rock River, 17 December 1980.

Richard Nelson, resident of Rock River, 17 December 1980.



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Topography from aerial photographs by multiplex methods  
and by planetable surveys 1955. Aerial photographs taken 1947

Polyconic projection, 1927 North American datum  
10,000-foot grid based on Wyoming coordinate system,  
east zone

